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### REMARKS

Reexamination and reconsideration are requested in view of the foregoing amendments and remarks that follow. Claims 1 to 16 remain for consideration on the merits.

At the outset applicant's agent wishes to thank the Examiner for his helpful comments and suggestions with respect to alleviating the language informalities and duplicative claiming.

### Claim Informalities

The Examiner pointed out a duplicative and grammatically awkward language in claims 5 and 13 and requested correction. Accordingly claims 5 and 13 have been amended by deleting the duplicative and awkward language.

### Duplicative Claim Warning

The Examiner pointed out that claims 8 and 16 cover essentially the same subject matter and are duplicative. The Examiner is correct in that a typographical error occurred insofar as the dependency is concerned. The claim 16 erroneously depends from claim 1 instead of claim 10. The correction has been effected in claim 16 which has been amended to depend from claim 10.

### Indefiniteness Rejection

Relying on 35 U.S.C. § 112, second paragraph, the Examiner rejected claims 1 to 15 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant claims as the invention. Particularly, the Examiner points out that there is no antecedent basis in these claims for reciting a "toothpaste formulation" since they depend from claim 9 which recites a "method for stabilizing." Accordingly, claims 11 to 15 have been amended to recite a "method." Claim 16 has also been amended to recite a "method" because of the change of dependency from claim 1 to claim 10.

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### Obviousness Rejection

Relying on 35 U.S.C. § 103(a), the Examiner rejected 1 to 3 and 9 to 11 as being unpatentable over U.S. Patent No. 5,368,843 to Rennie. The Examiner states the following:

"The primary reference discloses thickeners comprising mixtures of a gum and an acrylic acid polymer. The gum may be a guar (column 1, lines 54-56) and the acrylic acid polymer a crosslinked acrylic acid copolymer, i.e. carbopol. These mixtures are synergistically effective in controlling rheology, i.e., in increasing composition stability by maintaining a stable suspension of dispersion (column 1 lines 10-20). The reference discloses many commercial uses and specifically prepares a toothpaste composition (working example 6 at column 10) containing silica and alumina abrasives (both "multivalent cation containing agents" as recited instantly), sodium lauryl sulphate, and sodium dodecyl benzene sulphonate surfactants, and a mixture of xanthan gum ("Shellflo-XA") and an acrylic polymer (Tiona-G). The primary reference is not anticipatory insofar as one must "pick and choose" carbopol and guar gum from different lists within the disclosure, with no discrete embodiment (e.g., a preferred formulation or working example containing both being particularly set forth. That being said, it would have been obvious in a self-evident manner to have selected guar gum from one list and a carbopol from the other, motivated by their unambiguous disclosure and consistent with the basic principle of patent prosecution that a reference should be considered as expansively as is reasonable in determining the full scope of the contents within its four corners."

The obviousness rejection of claims 1 to 3 and 9 to 11 over the primary Rennie citation is respectfully traversed. Rennie teaches that certain gums when used in combination with acrylate-type polymers such as crosslinked acrylic acid polymer in a liquid medium produce a synergistic thickening effect if each of the individual polymers is selected according to its respective sigmoid curve of log (viscosity) vs. log (concentration) for the liquid medium, and each polymer is selected from its sigmoid curve's lower portion having an increasing or substantially constant gradient (column 3, lines 3-15). While the Rennie citation discloses that several of the disclosed embodiments of the invention may contain a synergistic combination of a gum and an acrylic acid polymer, it must be pointed out that the general teaching of the combination of a generic gum and an acrylic acid polymer does not extend to toothpaste compositions. Rennie takes great measure to distinguish the disclosed toothpaste composition for the other disclosed embodiments of in the citation. At column 6, lines 13-23, Rennie is very specific in as to the type of gum that is intended for toothpaste compositions in that Rennie states:

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"In this respect, it has been surprisingly found that the inclusion of the synergistic mixture in toothpastes can provide toothpastes which have a higher gloss, a cleaner ribbon break and a smoother texture than toothpastes which have been thickened with the aid of current thickeners, e.g., sodium carboxymethyl cellulose. The present invention thus beneficially extends to a liquid system in the form of toothpaste containing 0.25 to 5 wt. % of thickening mixture comprising preferably, with respect to the final composition, 0.2 to 3 wt. % synthetic cross-linked acrylate polymer 0.05 to 2 wt. % xanthan gum and/or xanthan gum derivative."

The disclosed gum is specific to xanthan gum and/or xanthan gum derivatives. There is no teaching, suggestion, or implication drawing any equivalence between xanthan gum and guar gum for use in stabilizing toothpaste compositions. As evidence that xanthan gum is not equivalent to a galactomannan gum, applicants present the following table of experimental results that were obtained at the time of the invention but not included in the instant specification.

Four experimental toothpaste formulations containing the ingredients set forth in the Table below were formulated as disclosed in instant Examples 1 and 2, except that the acrylic acid polymer was neutralized with NaOH during mixing. The stability of each formulation was evaluated as set forth in the examples. The ingredients were obtained from the same sources as indicated in the instant examples.

TABLE

Ingredients	Exp. 1	Exp. 2	Exp. 3	Exp. 4
Carbopol <sup>®</sup> 974P-NF (x-linked acrylic acid polymer)	0.4	0.35	0.4	0.4
Xanthan Gum	0.4	0.35	0.4	0.36
Diagum CSCassia Galactomannan	0	0.1	0.04	0.04
D.I. water	28.5	28.5	28.5	23
Sorbitol (70%)	43	43	43	43
Na Monofluorophosphate	0.75	0.75	0.75	0.75
Sodium Saccharin	0.2	0.2	0.2	0.2
Glycerine	9.6	9.6	9.6	9.6
NaOH (18%)	0.2	0.2	0.2	0.2
Calcium Carbonate (cation source)	14.5	14.5	14.5	14.5
Phase Separation	Yes	No Hard Gel	No	No

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As is apparent from experiment 1, xanthan gum does not stabilize toothpaste compositions that contain crosslinked acrylic acid polymers against multivalent cations.

Moreover, and contrary to the Examiner's contention there are no multivalent cations present in the Rennie toothpaste composition. The Examiner states that: "The reference discloses many commercial uses and specifically prepares a toothpaste composition (working example 6 at column 10) containing silica and alumina abrasives (both "multivalent cation containing agents" as recited instantly)." Applicants respectfully disagree with this assertion. Silica (SiO<sub>2</sub>) and alumina (Al<sub>2</sub>O<sub>3</sub>) are insoluble and inert materials. Silicon dioxide which is the material that makes up sand will not dissociate to produce multivalent Si cations. Aluminum oxide is an excellent thermal and electrical insulator and its hardness makes it suitable for use as an abrasive material and as a component in cutting tools. While aluminum oxide may dissociate at very low or very high pH values (e.g., pH below 3 and above 10), these pH values are too extreme for the tissues located in interior of the mouth in that they will burn and blister the epithelial and tongue tissues present in the interior of the oral cavity. Typically, the pH of a toothpaste formulation will range from about 5 to about 8.8. Consequently, there is no teaching, suggestion or teaching in Rennie that motivates the skilled artisan to employ galactomannan gum to stabilize toothpaste composition that thickened with a crosslinked acrylic acid polymer against the deleterious effects of multivalent cations as now set forth in amended claims 1 and 9 which require the presence of multivalent cations.

Relying on 35 U.S.C. § 103(a), the Examiner rejected claims 8 and 16 as being unpatentable over Rennie *supra* in view of U.S. Patent No. 4,855,128 to Lynch et. al. The Examiner relies on Lynch et. al. for its disclosure of calcium containing abrasives which are lacking in the primary Rennie citation. While Lynch et. al. disclose multivalent cation containing abrasives, as discussed *supra* in traversing Rennie there is no teaching in the primary citation that motivates the artisan of ordinary skill in the art to arrive at the instantly claimed invention. Rennie does not teach the interchangeability of xanthan with a galactomannan (guar) in toothpaste compositions. Rennie, as discussed above, is very specific in specifying his toothpaste components. Moreover, as shown above xanthan and a galactomannan in fact are not

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equivalent in achieving the same results in terms of toothpaste stabilization. Accordingly, since the primary citation to Rennie fails to establish a prima facie case of obviousness, the secondary citation does not make up the deficiency. Withdrawal of the rejection is respectfully requested.

Relying on 35 U.S.C. § 103(a), the Examiner rejected 4 to 7 and 12 to 15 as being unpatentable over Rennie in combination with Lynch et. al. in further view of U.S. Patent No. 2,798,053 to Brown. While Brown discloses that crosslinked acrylic acid polymers are useful to thicken dentifrice compositions, there it does not make up the deficiencies inherent in the Rennie and Lynch et. al. citations. While crosslinked acrylic acid polymers of various compositions have long been used to thicken dentifrice compositions such as toothpastes, there is no disclosure whatsoever in Brown that indicates that such thickeners can be stabilized against the deleterious effects of multivalent cations by incorporating a galactomannan into the composition. Accordingly, none of the citations taken alone or in combination render the instant claims prima facie obvious.

It is submitted that the cited art does not provide those skilled in the art with the motivation necessary to modify the primary Rennie citation in the manner alleged by the Examiner. Rennie does not suggest the desirability of preparing a toothpaste composition containing a crosslinked acrylic acid polymer that has been stabilized against multivalent cations by incorporating a galactomannan. Rennie discloses a toothpaste composition that specifically calls for xanthan gum. Rennie does not specifically teach the equivalence of xanthan gum and guar for toothpaste stabilization, and as demonstrated by applicant's data xanthan gum and a galactomannan gum are not equivalent in that xanthan fails to stabilize a toothpaste composition against phase separation in the presence of multivalent cations. Neither of the secondary citations makes up this deficiency. It is well established precedent that in order to render a modification of citations obvious, the prior art must contain some disclosure which would motivate those skilled in the art in the manner proposed by the Examiner.

Applicants submit that the alleged obviousness of the instantly claimed invention must be predicated on something more than it would be obvious to try substituting a galactomannan for xanthan to stabilize a toothpaste composition against multivalent cations. Where the prior art gives no indication of which parameters are critical and no direction as to which of the many

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possible choices is likely to be successful, the fact that the claimed combination may fall within the scope of the myriad of possible combinations taught therein does not render it unpatentably obvious. Clearly it is only by hindsight that the Examiner could impute to the toothpaste compositions of the applied citations the stabilizing effect of a galactomannan with respect to crosslinked acrylic acid polymers in the presence of multivalent cations to arrive at the instantly claimed toothpaste composition and method for stabilizing such toothpaste compositions.

In view of the amendment of claims 1 and 9 and for the reasons discussed above, Applicants respectfully submit that the rejections set forth under 35 U.S.C. § 103(a) are improper and should be withdrawn and request an early Notice of Allowance with respect to claims 1 to 16.

If the Examiner has any questions, please feel free to contact the undersigned at the telephone number noted below.

Respectfully submitted,

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